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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,315	09/17/2003	William P. D'Amico	1855-SPL	4200

7590 04/01/2005

The Johns Hopkins University
Applied Physics Laboratory
11100 Johns Hopkins Road
Laurel, MD 20723-6099

EXAMINER

ROJAS, BERNARD

ART UNIT	PAPER NUMBER
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2832

DATE MAILED: 04/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/664,315

Applicant(s)

D'AMICO ET AL.

Examiner

Bernard Rojas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 10-12 and 15-20 is/are rejected.
- 7) ☒ Claim(s) 6, 8, 9, 13 and 14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 02092004.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 7, 10, 11 and 16-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Bosch et al. [US 5,322,258].

Claim 1, Bosch et al. disclose a switching device comprising: a capacitive switch; a magnetic field source [Magnet 1, Magnet 2] operative to apply a magnetic field across the switch; and an electrical conductor [Current Conductor] providing therealong a path of conduction of a current in opposite directions, the electrical conductor being juxtaposed with the capacitive switch [figure 3a] and extending transversely to the magnetic field [figure 1a] for triggering the capacitive switch between an on- and off-state in accordance with a direction of current flow along the electrical conductor.

Claim 2, Bosch et al. disclose the switching device of claim 1, wherein the capacitive switch is an electrostatic switch, the switching device being a microelectromechanical Lorentz-force assisted switching device [abs].

Claim 3, Bosch et al. discloses the switching device of claim 2, wherein the electrostatic switch is configured to have a pull-down electrode [Electrode, figure 3a] continuously supported by a substrate and a bridge [Diaphragm] straddling the pull-down electrode and being operative to move towards and away from the pull-down

electrode in accordance with the direction of current flow along the electrical conductor to selectively set the on- and off-state of the capacitive switch [col. 3 line 65 to col. 4 line 26].

Claim 4, Bosch et al. discloses the switching device of claim 3, wherein the electrical conductor is provided on a top surface of the bridge [figure 3a].

Claim 5, Bosch et al. discloses the switching device of claim 3, wherein the bridge has a central body elevated above the pull-down electrode in the off-state of the capacitive switch and spaced apart pads coupled to the central body and supported on the substrate [figure 3a].

Claim 7, Bosch et al. discloses the switching device of claim 3, wherein the bridge and the pull-down electrode overlap one another in the on-state of the capacitive switch, the pull-down electrode being configured to have a one-body component or multiple components spaced apart along the substrate [figure 3a].

Claim 10, Bosch et al. discloses the switching device of claim 1, further comprising an electric source coupled to the electrical conductor [source waveform, figure 5] and a magnetic field generating source of a permanent magnet, wherein coupling of the magnetic and electric fields produces Lorentz force directed substantially perpendicular to the magnetic and electric fields [col. 3 line 65 to col. 4 line 26].

Claim 11, Bosch et al. discloses the switching device of claim 10, wherein the electric source generates a pulse-shaped signal, the switching device further comprising a device for reversing the direction of current flow along the electrical conductor [source waveform, figure 5].

Claims 16-20, the method steps for operating the microelectromechanical switching is inherent in the product structure as described previously in claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bosch et al. [US 5,322,258] in view of Dickens et al. [US 6,657,525].

Claims 12 and 15, Bosch et al. discloses a microelectromechanical valve system (MEMS) switch comprising: a substrate; a capacitive switching assembly provided on the substrate and positionable in magnetic and electrical fields extending coplanar with

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but transversely to one another to generate a Lorentz force applied to the capacitive switching assembly to selectively move a diaphragm.

Bosch et al. fails to teach the use of electric contacts on the substrate to be bridged by a contact on the diaphragm.

Dickens et al. discloses a microelectromechanical system (MEMS) switch comprising: a substrate; multiple contacts spaced from one another and supported by the substrate; and a capacitive switching assembly provided on the substrate to selectively short the multiple contacts [figure 2].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a multiple electrical contacts to be bridged by the actuating member in order to provide a current-less open switching state with a closed switching state that can be maintained virtually without power.

Allowable Subject Matter

Claims 6, 8, 9, 13 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard Rojas whose telephone number is (571) 272-1998. The examiner can normally be reached on M-F 8-4:00), every other Friday off.

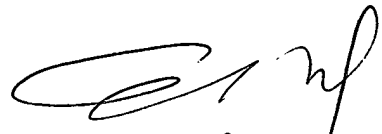
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin G. Enad can be reached on (571) 272-1990. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Bernard R.

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